UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/599,194	06/22/2000	Nathan M. Denkin	12-6-2	8149

7590 03/11/2004

TROUTMAN, SANDERS, MAYS & VALENTINE
attn: JOHN E. CURTIN
1660 INTERNATINAL DRIVE
SUITE 600
MCLEAN, VA 22102

EXAMINER	
NGUYEN, CHAU M	
ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/599,194	DENKIN ET AL.	
	Examiner	Art Unit	
	Chau M Nguyen	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 June 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 8 is rejected under 35 U.S.C. 102(e) as being anticipated by Kinoshima (U.S. Pat. No. 5,909,305).

As claim 8, Kinoshima discloses an sensor (fig. 6) comprising:

apparatus (10) for receiving a plurality of optical signals and filtering the plurality of signals to form a group of signals (col. 7, lines 48-54),

first apparatus (14) for processing a first portion of the power levels of the group of signals to generate a first power signal S1,(P_O). (col. 7, lines 57-58 and col. 8, lines 52-53)

second apparatus (18) for processing a second portion of the power levels of the group of signals to form a group of weighted signals, and processing the group of weighted signals to generate a second weighted power signal S2,(P_1) (col. 7, lines 59-64) and

third apparatus (20) for generating, as a function of the first and second power signals, P_O and P_1, a signal indicative of whether a particular transmission impairment has

affected the levels of individual ones of the received plurality of optical signals (col. 8, lines 12-27).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshima (U.S. Pat. No. 5,909,305) in view of Ono (U.S. Pat. No. 5,861,980), and in further view of Itou et al. (Hereinafter "Itou") (U.S. Pat. No. 5,870,217).

As claim 1, Kinoshima discloses a transition node (fig. 21)comprising:

apparatus (112) that receives at an input via a transmission path (100) an optical signal formed from a plurality of optical signals (col. 6, line 20) of respective wavelengths,

sensor apparatus (14, 18 see fig. 6) operative for generating a first signal S1,(as P_O), indicative of the total power across a group of the received optical signals (col. 8, lines 50-52), and a second signal S2, (as P_1) indicative of the total power across the group of optical signals after those signals have been subjected to a predetermined weighting function (col. 7, lines 59-62), and

controller apparatus (20) for offsetting the levels of the first and second signals.

Kinoshima does not clearly show the optical signals may have been affected by Raman scattering occurring along the transmission path; and

the controller for offsetting the affect of such Raman scattering as a function of the sum the two signals.

However, Ono discloses the use of Raman amplifier (col. 9, lines 1-2) and the output power of the amplifier is detected (col. 2, lines 65-67), and this signal is for controlling the output power of a laser (col. 3, lines 3-5), therefore the Raman effect is inherently included in the process. Further, in view of Itou, (fig. 21), shows the signal that produced by photodiodes (or detectors) to be added by an adder for generating a control signal (Itou, col. 27, lines 21-25). Since all three references are related to the optical transmission, particularly, to the stabilization of light signals, therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use an adder as taught by Itou into the system of Kinoshima in order to generate a combined signal to control the output power of the optical signal, by doing this, the output of the optical signal; at the output side may be fixed equally for each wavelength (Itou, col. 37, lines 55-60). Besides, this combined signal is used to analyze the power of the output light that may affected by Raman scattering as shown by Ono in order to calculate the dispersion that based on the controlling of output power (Ono, col. 3, lines 28-30).

5. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono (U.S. Pat. No. 5,861,980) in view of Itou et al. (Hereinafter "Itou") (U.S. Pat. No. 5,870,217).

As claim 1, Ono discloses (fig. 10) an apparatus (18) that receives at an input via a transmission path an optical signal formed from a plurality of optical signals (1) of respective wavelengths, in which the levels of individual ones of the optical signals may have been affected by Raman scattering occurring along the transmission path (col. 9, lines 1-2).

sensor apparatus (denoted by 5) operative for generating a first signal (as P_O, defined by applicant) indicative of the total power across a group of the received optical signals (col. 2, lines 65-67), and a second signal (P_1) indicative of the total power across the group of optical signals after those signals have been subjected to a predetermined weighting function (i.e. through branch b of a circulator) (col. 3, lines 6-19), and

controller apparatus (13) (col. 7, lines 4-13) for offsetting the affect of such Raman scattering as a function of the levels of the first and second signals (col. 7, line 62- col. 8, line 1).

Ono shows CPU 13 (controller apparatus) for processing the signals that output from photodiodes. Ono does not clearly show the signal for offsetting is the sum of the first and second signals. However, Itou (fig. 21) shows the signal that produced by photodiodes (or detectors) to be added by an adder for generating a control signal (Itou, col. 27, lines 21-25). Since Itou's invention is related to controlling the optical output signals by generating a control signal based on plurality of the test or measured signals. Therefore, it would have been obvious to one having an ordinary skill in the art to apply an adder as taught by Itou to add or combine plurality of signals from detectors in order to created a controller apparatus for adding the first and second signals. One would have motivated for doing this since the controlling section would generate a control signal based on the entire

output light detections (Itou, col. 27, line 29-33), so that, the power of the optical signal on the output side may be fixed equally for each wavelength (Itou, col. 37, lines 55-60).

As claim 2, Itou (fig. 21) shows each signal output from photodiodes (21-1... 21-N) are amplified by amplifiers (275-1, ...275-N) (col. 27, lines 16-23), and adder (276) for combining those output signal to form a signal indicative of the degree to which the group of signals were affected by Raman scattering (col. 27, lines 24-25).

6. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono in view of Itou as applied in the claim 1 above, and in further view of Nilsson et al. (Hereinafter "Nilsson") (U.S. Pat. No. 6,222,962 B1).

As claim 3, the system as a combination of Ono and Itou as described in the above section in that, Ono and Itou fail to disclose a band-pass filter for filtering one of the bands of optical signals to form the group signal. However, Nilsson show the use of a pre-filter for filtering one of optical signals to form the group signals (fig. 1, col. 4, lines 53). Therefore, it would have been obvious to one having an ordinary skill to use a pre-filter as taught by Nilsson into the combination system of Ono and Itou in order to eliminate the other different bands of optical signal from the designed group signals.

As claim 4, Ono (fig. 10) shows sensor includes a total power detector and apparatus for supplying a first portion of the power (by 5) of the group of signals to the total power detector and for supplying a second portion of the power (by 5, preceding by

circulator) of the group of signals to the predetermined weighting function which generates a weighted version of the group of signals.

As claim 5, Ono (fig. 10) shows the predetermined weighting function (branch b of the circulator 3) includes a router which demultiplex the group of signals, supplies the demultiplexed signals to weighting apparatus to reduce the level of power of individual ones of the demultiplexed signals proportional to their respective wavelengths, and then routes the weighted signals to a multiplexed output for delivery to a power detector operative for detecting the power across the weighted signals and generating signal (P_1) that input to the optical detector 5. (Ono, col. 3, lines 6-20 and col. 8, lines 54-56).

As claim 6, Ono discloses the weighting apparatus is a variable reflection device (Ono, col. 3, lines 6-8).

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ono in view of Itou as applied in the claim 1 above, and in view of Nilsson as applied in the claims 3 and 5, and in further view of Onaka et al. (Hereinafter "Onaka") (U.S. Pat. No. 6,359,726 B1).

As claim 7, the system as a combination of Ono, Itou and Nilsson does not show the weight apparatus is a variable loss device. However, Onaka discloses the use of a variable loss device for measuring the input light power (Onaka, col. 7, lines 59-61). Therefore, it would have been obvious to one having ordinary skill in the art to use a

variable loss device, as taught by Onaka, as a weighting apparatus, into the above combination system for detecting the power of the light signals. Since the loss characteristics which corresponds with the gain characteristics (Onaka, col. 8, line 19-21), the optical amplifier is able to reliable compensate for the gain wavelength characteristic of the optical amplification section which varies in accordance with the input light power even the input light varies over the wide range (Onaka, col. 8, lines 56-61).

8. Claims 8, 9 and 11are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono (U.S. Pat. No. 5,861,980), in view of Nilsson (U.S. Pat. No. 6,222,962 B1).

As claims 8 and 11, Ono (fig. 10) discloses:

an apparatus (18) that receives plurality of optical signals (1)

first apparatus (5) for processing a first portion of the power levels of the group of signals to generate a first signal (as P_O) (col. 2, lines 65-67),

second apparatus (5) (at the branch c of the circulator) for processing the power levels of the group of signals to form a group of weighted signal, and processing the group of weighted signals to generate a second signal (P_1) (i.e. through branch b of a circulator) (col. 3, lines 6-19), and

third apparatus (13) apparatus (13) (col. 7, lines 4-14) for generating, as a function of the first and the second power signals, a signal indicative of whether a particular transmission impairment has affected the levels of individual ones of the received plurality of optical signals (col. 7, line 62 – col. 8. line 1).

Ono does not the receiving apparatus including a filter for filtering the plurality of signals to form a group of signals. However, Nilsson show the use of a band-pass filter for filtering one of optical signals to form the group signals (fig. 1, col. 4, lines 53). Therefore, it would have been obvious to one having an ordinary skill to use a pre-filter as taught by Nilsson into the combination system of Ono in order to eliminate the other different bands of optical signal to form a group of signals.

As claim 9, Ono shows the use of Raman amplifier, therefore the transmission impairment is Raman scattering (Ono, col. 9, lines 1-2).

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ono in view of Nilsson, as applied in the claim 8, and in further view of Itou (U.S. Pat. No. 5,870,217).

As claim 10, the system, as a combination of Ono and Nilsson, as described in the above section (section for the rejection of claim 8) in that, the system fails to show:

multiplier apparatus operative for multiplying the signal P_O by a first constant, C_O, and for multiplying the signal P_1 by a second constant C_1, and

combiner apparatus for combining the product $P_O C_O$ with the product $P_1 C_1$, to form a signal, P_R, indicative of the degree to which the plurality of optical signals were affected by the transmission impairment.

However, Itou (fig. 21) teaches:

multiplier apparatus (AMPs 275-1, ..., 275-N) operative for multiplying the signal, (P_O), by a first constant, (C_O), and for multiplying the signal, (P_1), by a second constant, (C_1), and

combiner apparatus (adder 276) for combining the product (P_O C_O) with the product (P_1 C_1) to form a signal,(P_R), indicative of the degree to which the plurality of optical signals were affected by the transmission impairment.

Therefore, it would have been obvious to one having ordinary skill in the art to use amplifiers for multiplying the electrical signals to a designed levels, and combine those signals as taught by Itou into the combination system of Ono and Nilsson in order to form a single signal, indicative of the degree to which the plurality of optical signals were effected by the transmission impairment. One would have motivated for doing this since the controlling section would generate a control signal based on the entire output light detections (Itou, col. 27, line 29-33), so that, the power of the optical signal on the output side may be fixed equally for each wavelength (Itou, col. 37, lines 55-60).

10. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono in view of Nilsson, as applied in the claims 8 and 11, an in further view of Doerr (U.S. Pat. No. 6,141,467)

As claim 12, the combination system of Ono and Nilsson, as described in the rejection section for the claim 8 and 10, fails to show the second apparatus includes a router to demultiplex the group of signals, supply the demultiplexed signals to weighting apparatus to reduce the level of power of individual ones of the demultiplexed signals

proportional to their respective wavelengths, and then route the weighted signals to a multiplexed output for delivery to a power detector operative for detecting the power across the weighted signals and generating signal P_1.

However, Doerr (fig. 13) discloses the apparatus includes a router (1 and 2) to demultiplex the group of signals (input lines 1 and/or 2), supply the demultiplexed signals to weighting apparatus (1306 and 1030) to reduce the level of power (col. 11, lines 52-56) of individual ones of the demultiplexed signals proportional to their respective wavelengths, and then route the weighted signals to a multiplexed output for delivery to a power detector operative for detecting the power across the weighted signals (Doerr, col. 8, lines 18-59 and).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to apply a router to demultiplex the group of signal as taught by Doerr into the combination of Ono and Nilsson in order to supply the demultiplexed signals to weighting apparatus to reduce the level of power of each ones of the demultiplexed signals proportional to their respective wavelengths, and then route the weighting signals to a multiplexed output for delivery to a power detector operative for detecting the power across the weighted signals.

One would have motivated for doing this since each channel is supplied to the weighting apparatus separately, this arrangement allows for control of relative power of channels passing through device. (Doerr, col. 1, lines 54-56)

As claim 13, Ono discloses the weighting apparatus is a variable reflection device (Ono, col. 3, lines 6-8).

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ono Nilsson and Doerr as applied in the rejection claim 12 above, and in further view of Onaka et al. (Hereinafter "Onaka") (U.S. Pat. No. 6,359,726 B1).

As claim 14, the system as a combination of Ono, Nilsson and Doerr does not show the weight apparatus is a variable loss device. However, Onaka discloses the use of a variable loss device for measuring the input light power (Onaka, col. 7, lines 59-61). Therefore, it would have been obvious to one having ordinary skill in the art to use a variable loss device, as taught by Onaka, as a weighting apparatus, into the above combination system for detecting the power of the light signals. Since the loss characteristics which corresponds with the gain characteristics (Onaka, col. 8, line 19-21), the optical amplifier is able to reliable compensate for the gain wavelength characteristic of the optical amplification section which varies in accordance with the input light power even the input light varies over the wide range (Onaka, col. 8, lines 56-61).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Maxham et al. (U.S. Pat. No. 5,374,973) is cited to show optical amplifier.

Takeda et al. (U.S. Pat. No. 5,467,218) is cited to show optical fiber amplifier.

Hamada (U.S. Pat. No. 5,703,711) is cited to show in-line optical amplifier.

Roberts (U.S. Pat. No. 6,072,641) is cited to show monitoring induced counterpropagating signals in optical communications system.

Berger et al. (U.S. Pat. No. 6,088,152) is cited to show optical amplifier arranged to offset Raman gain.

Akasaka et al. (U.S. Pat. No. 6,292,288 B1) is cited to show Raman amplifier, optical repeater and Raman amplifier method.

Onaka et al. (U.S. Pat. No. 6,359,726 B1) is cited to show WDM optical amplifier.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chau M. Nguyen whose telephone number is 703-305-8965. The examiner can normally be reached on Mon-Fri from 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4726. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

C.M.N.
Mar. 02, 2004

Leslie Pascal

LESLIE PASCAL
PRIMARY EXAMINER